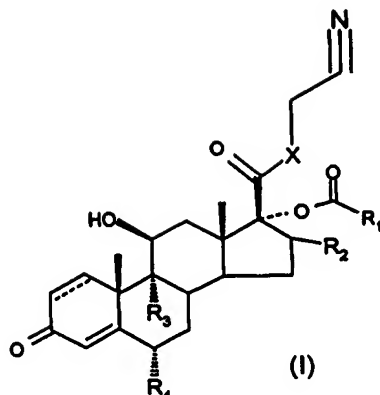


CLAIMS

1. A compound of formula (I):



5 wherein


X represents O or S;

R<sub>1</sub> represents C<sub>1-8</sub> alkyl, C<sub>3-8</sub> cycloalkyl, C<sub>3-8</sub> cycloalkylmethyl or C<sub>3-8</sub> cycloalkenyl any of which optionally may be substituted by one or more methyl groups or halogen atoms or R<sub>1</sub> represents aryl, substituted aryl, heteroaryl or substituted

10 heteroaryl;

R<sub>2</sub> represents hydrogen, methyl, which may be in either the α or β configuration, or methylene;

R<sub>3</sub> and R<sub>4</sub> are the same or different and each independently represents hydrogen, halogen or a methyl group;

15 and  represents a single or a double bond; or a physiologically acceptable salt or solvate thereof.

2. A compound as claimed in claim 1 wherein X represents O.

20 3. A compound as claimed in claim 1 or claim 2 wherein R<sub>1</sub> represents a C<sub>3-8</sub> cycloalkyl group optionally substituted by one or more methyl or chlorine groups.

4. A compound as claimed in any one of claims 1 to 3 wherein R<sub>1</sub> represents 2,2,3,3-tetramethylcyclopropyl.

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5. A compound as claimed in any one of the preceding claims wherein R<sub>2</sub> represents methyl in the α-configuration.

6. A compound as claimed in any one of the preceding claims wherein R<sub>3</sub> and R<sub>4</sub> are both fluorine.

7. A compound as claimed in anyone of the preceding claims wherein

5  represents a double bond.

8. A compound as claimed in any one of the preceding claims which is

6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethycyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-

10 cyanomethyl ester;

17 $\alpha$ -(4-[(Diethylamino)sulphonyl]benzoyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;

17 $\alpha$ -(5-Chloro-4-methoxy-thiophene-3-carbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;

15 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethycyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

17 $\alpha$ -(Cyclohexylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

20 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(2,6-difluorobenzoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-17 $\alpha$ -(4-methoxybenzoyl)oxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

17 $\alpha$ -(4-Cyanobenzoyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

25 17 $\alpha$ -(Cyclopentylmethylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3,3-dimethylbutanoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

30 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-17 $\alpha$ -(2-isopropyl-1,3-thiazole-4-carbonyl)oxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(quinoline-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

35 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(5-trifluoromethyl-furan-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylsulphonyl-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylthio-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 5 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(5-ethyl-isoxazole-3-carbonyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 9 $\alpha$ -Fluoro-11 $\beta$ -hydroxy-16 $\beta$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester.  
 10 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androst-4-ene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 17 $\alpha$ -(5-Chloro-4-methoxy-thiophene-3-carbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 15 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylcyclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;  
 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylcyclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;  
 17 $\alpha$ -(Cyclohexylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;  
 20 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylsulphonyl-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S- cyanomethyl ester;  
 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(5-trifluoromethyl-furan-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester; or  
 25 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3-(difluoromethylthio)benzoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester.

9. A compound as claimed in claim 8 which is

- 30 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;  
 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;

- 9 $\alpha$ -Fluoro-11 $\beta$ -hydroxy-16 $\beta$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 17 $\alpha$ -(Cyclohexylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 17 $\alpha$ -(Cyclopentylmethylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3,3-dimethylbutanoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3-(difluoromethylthio)benzoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;
- 17 $\alpha$ -(Cyclohexylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(5-ethyl-isoxazole-3-carbonyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-17 $\alpha$ -(5-methylthio-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-17 $\alpha$ -(2-isopropyl-1,3-thiazole-4-carbonyl)oxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylcyclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester; or
- 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylcyclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester.
10. A compound as claimed in claim 9 which is
- 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylcyclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester;
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carbothioic acid S-cyanomethyl ester; or
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester

11. A compound as claimed in claim 10 which is

6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(2,2,3,3-tetramethylcyclopropylcarbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid cyanomethyl ester.

5 12. A compound of formula (I) as defined in any one of claims 1 to 11 or a physiologically acceptable solvate thereof for use in veterinary or human medicine.

10 13. Use of a compound of formula (I) as defined in any one of claims 1 to 11 or a physiologically acceptable solvate thereof for the manufacture of a medicament for the treatment of inflammatory and/or allergic conditions.

15 14. A pharmaceutical composition comprising a compound of formula (I) as defined in any one of claims 1 to 11 or a physiologically acceptable solvate thereof together, if desirable, in admixture with one or more physiologically acceptable diluents or carriers.

20 15. A pharmaceutical aerosol formulation comprising a compound of formula (I) as defined in any one of claims 1 to 11 or a physiologically acceptable solvate thereof, and a fluorocarbon or hydrogen-containing chlorofluoro carbon as propellant, optionally in combination with a surfactant and/or a cosolvent.

16. A pharmaceutical composition according to claim 15 which further comprises another therapeutically active agent.

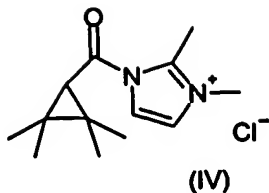
25 17. A pharmaceutical composition according to claim 16 in which said another therapeutically active agent is a  $\beta_2$ -adrenoreceptor agonist.

30 18. A method for the treatment of a human or animal subject with an anti-inflammatory and/or allergic condition, which method comprises administering to said human or animal subject an effective amount of a compound of formula (I) as defined in any one of claims 1 to 11 or a physiologically acceptable solvate thereof.

35 19. A compound which is 17 $\alpha$ -(4-[(Diethylamino)sulphonyl]benzoyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid

- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(2,6-difluorobenzoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-17 $\alpha$ -(4-methoxybenzoyl)oxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 5 17 $\alpha$ -(4-Cyanobenzoyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3,3-dimethylbutanoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-17 $\alpha$ -(2-isopropyl-1,3-thiazole-4-carbonyl)oxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 10 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(quinoline-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(5-trifluoromethyl-furan-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 15 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylsulphonyl-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylthio-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(5-ethyl-isoxazole-3-carbonyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 20 17 $\alpha$ -(5-Chloro-4-methoxy-thiophene-3-carbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carboxylic acid
- 25 17 $\alpha$ -(2,2-Dichloro-3,3-dimethylclopropylcarbonyl)oxy-6 $\alpha$ ,9 $\alpha$ -difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl -17 $\alpha$ -(5-methylsulphonyl-thiophene-2-carbonyl)oxy-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid
- 30 6 $\alpha$ ,9 $\alpha$ -Difluoro-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-17 $\alpha$ -(5-trifluoromethyl-furan-2-carbonyl)oxy-androsta-1,4-diene-17 $\beta$ -carbothioic acid, or
- 6 $\alpha$ ,9 $\alpha$ -Difluoro-17 $\alpha$ -(3-(difluoromethylthio)benzoyl)oxy-11 $\beta$ -hydroxy-16 $\alpha$ -methyl-3-oxo-androsta-1,4-diene-17 $\beta$ -carbothioic acid.

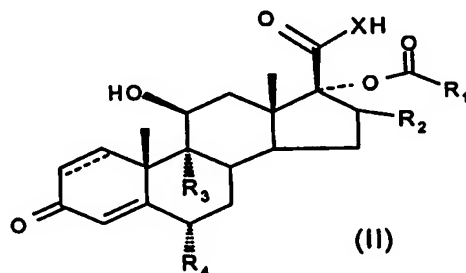
20. A compound of formula (IV):



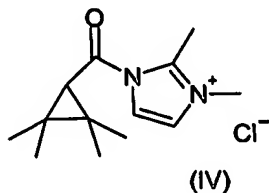
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2,3-dimethyl-1-[(2,2,3,3-tetramethylcyclopropyl)carbonyl]-1*H*-imidazol-3-ium chloride.

21. A process for preparing a compound of formula (II)

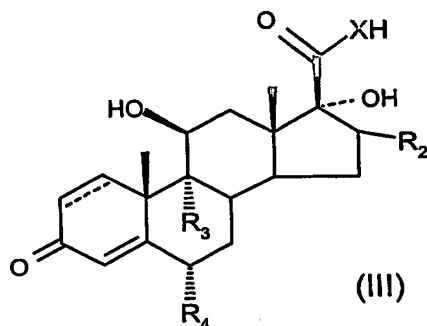


10 where  $R_1$  represents 2,2,3,3 – tetramethyl cyclopropyl and  $R_2$ ,  $R_3$ ,  $R_4$ , X and  $\text{---}$  are as defined in any one of claims 1 to 7 which process comprises reaction of the 1,2-dimethyl-1*H*-imidazolium ester of 2,2,3,3-tetramethylcyclopropane carboxylic acid (IV)



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with the corresponding 17 $\alpha$ -hydroxyl derivative of formula (III)



22. A process as claimed in claim 21 in which X represents O.